UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/679,138	10/03/2000	Rex Hill	39815/JEJ/X2	6542

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EXAMINER
KADING, JOSHUA A

ART UNIT	PAPER NUMBER
2661	

DATE MAILED: 06/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/679,138	HILL ET AL.
	Examiner	Art Unit
	Joshua Kading	2661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 March 2004*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,5,8-18,21,22 and 25-31* is/are pending in the application.

　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *8-11 and 25-28* is/are allowed.

6)☒ Claim(s) *1, 4, 5, 12-18, 21, 22, and 29-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 October 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　a)☐ All　b)☐ Some * c)☐ None of:

　　1.☐ Certified copies of the priority documents have been received.

　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in

compliance with 37 CFR 1.67(a) identifying this application by application

5   number and filing date is required. See MPEP §§ 602.01 and 602.02.

> The oath or declaration is defective because:
> Non-initialed and/or non-dated alterations have been made to the oath or
> declaration. See 37 CFR 1.52(c).

10   For inventor Rex Hill, the written address of the originally filed Oath and

Declaration is not initialed and/or dated.

> It does not identify the mailing address of each inventor. A mailing
> address is an address at which an inventor customarily receives his or her
> mail and may be either a home or business address. The mailing address
15   should include the ZIP Code designation. The mailing address may be
> provided in an application data sheet or a supplemental oath or
> declaration. See 37 CFR 1.63(c) and 37 CFR 1.76.

For inventor Bryan Dietz there is not mailing address.

20

Claim Objections

Claim 14 is objected to because of the following informalities:

Claim 14, line 14 states "the associated subtuple". There is no antecedent

basis for this, therefore it should be changed to --the associated portion of the

25   tuple-- to be consistent with the rest of the claim language.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action

can be found in a prior Office action.

5   Claims 1, 4, 14-18, and 21 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Irwin (U.S. Patent 6,052,683) in view of Emery et al. (U.S.

Patent 5,530,854).

In regard to claim 1, Irwin discloses "a method for determining packet

10   processing data, comprising the steps of:

receiving a packet (col. 10, line 66 where the incoming destination address

means that a packet, as described in Table A1 in col. 3, was received);

forming a plurality of subtuples for the packet from flow properties

associated with the packet (col. 3, Table A1 where some fields descriptive about

15   the flow properties of the packet such as destination address, source address,

etc. can be considered tuples and the different bytes of the destination address,

for example, can be considered subtuples);

applying one or more of the subtuples as respective inputs to [a] respective

one or more lookups (col. 10, lines 66-67 and col. 11, line 1 where the first byte

20   of the destination lookup is a subtuple applied to the binary tree or lookup)...

returning packet processing data as an output from at least one of the

lookups (col. 11, lines 2-5 where the list that is generated contains information on

packet processing)."

However, Irwin lacks what Emery discloses, "...returning a nickname as an output from at least one of the lookups (figure 4, element 415 and 420 are combined to be the nickname returned from the first lookup), wherein the nickname has a lower bit count than the associated subtuple (figure 4, where

5   since element 415 is null and is thus empty, the returned nickname only consists of element 420, which makes the nickname smaller than the subtuple (element 430) used to access the lookup); and applying the nickname as an input to at least one of the lookups (figure 4, where the nickname (415 and 420) are used to access the next lookup in the sequence)..."

10   It would have been obvious to one with ordinary skill in the art at the time of invention to include the lower bit count nickname and applying the nickname to another lookup in another stage with the rest of the method for the purpose of having higher memory utilization. The motivation for having higher memory utilization leads to a reduction in search time and complexity (Emery, col. 7, lines

15   55-58).

In regard to claim 4, Irwin and Emery disclose the method according to claim 1. However, Emery lacks what Irwin further discloses, "fewer than all of the plurality of subtuples are applied as the respective inputs to the respective

20   lookups (col. 10, lines 66-67 and col. 11, line 1 where not all of the subtuples are applied to the lookups, in this instance only the first two bytes or subtuples of the destination address are applied)." It would have been obvious to one with ordinary skill in the art at the time of invention to have not all of the subtuples

applied to the inputs of the lookups with the method of claim 1 for the same reasons and motivation as in claim 1.

In regard to claim 14, Irwin discloses "a switching interface for a data

5   communication switch, comprising:

an access controller having a port for receiving a packet (col. 10, line 66 where the incoming destination address means that a packet, as described in Table A1 in col. 3, was received and in order for the packet to be received there must be a port); and

10   a switching engine coupled to the access controller (figure 6 shows an access controller 70 which is part of, and thus coupled, to the entire switching (routing) engine 60), the switching engine adapted to:

receive the packet from the access controller (figure 6, packet 80 is being received by element 66),

15   determine a tuple for the packet including a plurality of flow properties (figure 6, elements n1.n2 are the portions of the tuple of the packet which include flow properties such as addresses),

transmit ones of portions of the tuple to a database element (figure 6, element 66 is the database element)..."

20   However, Irwin lacks what Emery discloses, "...receive a nickname having a lower bit count than the associated [portion of the tuple] or packet processing data from the database element in response to one of the portions (figure 4,

element 415 and 420 are combined to be the nickname returned from the first

lookup and the nickname is then received by the next lookup)."

It would have been obvious to one with ordinary skill in the art at the time

of invention to include the lower bit count nickname and applying the nickname to

5   another lookup in another stage with the rest of the method for the purpose of

having higher memory utilization. The motivation for having higher memory

utilization leads to a reduction in search time and complexity (Emery, col. 7, lines

55-58).

10   In regard to claim 15, Irwin and Emery disclose the switching interface

according to claim 14. However, Emery lacks what Irwin further discloses, "the

flow properties include a destination address (col. 3, Table A1, Field-Destination

Address)." It would have been obvious to one with ordinary skill in the art at the

time of invention to include the flow properties having a destination address with

15   the interface of claim 14 for the same reasons and motivation as in claim 14.

In regard to claim 16, Irwin and Emery disclose the switching interface

according to claim 15. However, Emery lacks what Irwin further disclose, "the

flow properties include a source address, a port, and a quality of service (col. 3,

20   Table A1, Fields- Source Address, Service Type identifies the quality of service

and col. 6, lines 64-67 where the port form the mux comes from the information

in the header of the packet thus the port information is contained within the flow

properties)." It would have been obvious to one with ordinary skill in the art at the

time of invention to include the flow properties having source address, a port, and

a QoS with the interface of claim 15 for the same reasons and motivation as in

claim 15.

5   In regard to claim 17, Irwin and Emery disclose the switching interface

according to claim 14. However, Emery lacks what Irwin further discloses, "the

received packet processing data include a plurality of packet flow information

(col. 13, CAM table where it is clear that for each prefix or input to the lookup

there is a plurality of packet processing data)." It would have been obvious to one

10   with ordinary skill in the art at the time of invention to include the packet flow

information with the interface of claim 14 for the same reasons and motivation as

in claim 14.

       In regard to claim 18, Irwin discloses "a switching interface for a data

15   communication switch, comprising the steps of:

       means for receiving a packet (col. 10, line 66 where the incoming

destination address means that a packet, as described in Table A1 in col. 3, was

received);

       means for forming a plurality of subtuples for the packet from flow

20   properties associated with the packet (col. 3, Table A1 where some fields

descriptive about the flow properties of the packet such as destination address,

source address, etc. can be considered tuples and the different bytes of the

destination address, for example, can be considered subtuples);

means for applying one or more of the subtuples as respective inputs to [a]

respective one or more lookups (col. 10, lines 66-67 and col. 11, line 1 where the

first byte of the destination lookup is a subtuple applied to the binary tree or

lookup)...

5   means for returning packet processing data as an output from at least one

of the lookups (col. 11, lines 2-5 where the list that is generated contains

information on packet processing)."

However, Irwin lacks what Emery discloses, "...means for returning a

nickname as an output from at least one of the lookups (figure 4, element 415

10   and 420 are combined to be the nickname returned from the first lookup),

wherein the nickname has a lower bit count than the associated subtuple (figure

4, where since element 415 is null and is thus empty, the returned nickname only

consists of element 420, which makes the nickname smaller than the subtuple

(element 430) used to access the lookup); and means for applying the nickname

15   as an input to at least one of the lookups (figure 4, where the nickname (415 and

420) are used to access the next lookup in the sequence)..."

It would have been obvious to one with ordinary skill in the art at the time

of invention to include the lower bit count nickname and applying the nickname to

another lookup in another stage with the rest of the interface for the purpose of

20   having higher memory utilization. The motivation for having higher memory

utilization leads to a reduction in search time and complexity (Emery, col. 7, lines

55-58).

In regard to claim 21, Irwin and Emery disclose the interface according to claim 18. However, Emery lacks what Irwin further discloses, "fewer than all of the plurality of subtuples are applied as the respective inputs to the respective lookups (col. 10, lines 66-67 and col. 11, line 1 where not all of the subtuples are

5   applied to the lookups, in this instance only the first two bytes or subtuples of the destination address are applied)." It would have been obvious to one with ordinary skill in the art at the time of invention to have not all of the subtuples applied to the inputs of the lookups with the interface of claim 18 for the same reasons and motivation as in claim 18.

10

Claims 5 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Irwin (U.S. Patent 6,052,683) in view of Long et al. (U.S. Patent 6,145,064 B1).

15   In regard to claim 5, Irwin discloses "a method for determining packet processing data, comprising the steps of:

receiving a packet (col. 10, line 66 where the incoming destination address means that a packet, as described in Table A1 in col. 3, was received);

forming a tuple for the packet including a plurality of flow properties

20   associated with the packet (col. 3, Table A1 where some fields descriptive about the flow properties of the packet such as destination address, source address, etc. can be considered tuples and where the combination of these tuples is simply another tuple made of the flow properties of the packet); and

applying one or more portions of the tuple to respective one or more

lookups until packet processing data are returned...(col. 10, lines 66-67 and col.

11, line 1 where the destination address portion of the flow properties tuple is

used as an input to the lookup; col. 11, lines 2-5 where the list that is generated

5   contains information on packet processing)."

However, Irwin lacks what Long discloses, that is "wherein said

processing data comprises a recursion indicator that prevents the application of

each of the plurality of flow properties to a respective lookup (figures 2 and 8,

elements 109 and 708 where a description of this bit can be read in col. 4, lines

10   16-24, the valid flag bit of 109 is a functional equivalent to a recursion indicator

because they have the same effect, i.e. they both stop the execution of the

lookup process as seen in figure 8, step 708 and on)."

It would have been obvious to one with ordinary skill in the art at the time

of invention to include the recursion indicator with the rest of the method for the

15   purpose of identifying a valid entry into the table (Long, col. 4, lines 10-15). The

motivation is that if the entry is not valid no more resources or time are wasted on

further lookup operations.

In regard to claim 22, Irwin discloses "a switching interface for a data

20   communication switch, comprising:

...receiving a packet (col. 10, line 66 where the incoming destination

address means that a packet, as described in Table A1 in col. 3, was received);

means for forming a tuple for the packet including a plurality of flow

properties associated with the packet (figure 4, element 70 separates the various

parts of the header for use; col. 3, Table A1 where some fields descriptive about

the flow properties of the packet such as destination address, source address,

5   etc. can be considered tuples and where the combination of these tuples is

simply another tuple made of the flow properties of the packet); and

first means for applying one or more portions of the tuple to respective one

or more lookups until packet processing data are returned...(figure 4, the

connections between the components allow for a means of applying the

10   subtuples as inputs to the lookups; col. 10, lines 66-67 and col. 11, line 1 where

the destination address portion of the flow properties tuple is used as an input to

the lookup; col. 11, lines 2-5 where the list that is generated contains information

on packet processing)."

However, Irwin lacks a means for receiving a packet. Irwin also lacks what

15   Long discloses, that is "wherein said processing data comprises a recursion

indicator that: indicates the return of the packet processing data, and causes the

first means to terminate the application of the plurality of flow properties to a

respective lookup prior to the application of each of the plurality of flow properties

(figures 2 and 8, elements 109 and 708 where a description of this bit can be

20   read in col. 4, lines 16-24, the valid flag bit of 109 is a functional equivalent to a

recursion indicator because they have the same effect, i.e. they both stop the

execution of the lookup process as seen in figure 8, step 708 and on)."

It would have been obvious to one with ordinary skill in the art at the time

of invention to include the means for receiving a packet because it is necessary

to have if the system is to accept incoming data. It would have further been

obvious to one with ordinary skill in the art at the time of invention to include the

5   recursion indicator with the rest of the switching interface for the purpose of

identifying a valid entry into the table (Long, col. 4, lines 10-15). The motivation is

that if the entry is not valid no more resources or time are wasted on further

lookup operations.

10   Claims 12, 13, and 29-31 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Irwin in view of Li et al. (U.S. Patent 6,567,408 B1) and further

in view of Long et al.

In regard to claim 12, Irwin discloses "a method for determining packet

15   processing data, comprising the steps of:

receiving a packet (col. 10, line 66 where the incoming destination

address means that a packet, as described in Table A1 in col. 3, was received);

forming a tuple for the packet including a first subtuple identifying a first

flow property associated with the packet (col. 3, Table A1 where some fields

20   descriptive about the flow properties of the packet such as destination address,

source address, etc. can be considered tuples and where the combination of

these tuples is simply another tuple made of the flow properties of the packet)...

applying the first subtuple to a database element (col. 10, lines 66-67 and

col. 11, line 1 where the first byte of the destination lookup is a subtuple applied

to the binary tree or database element)...

However, Irwin lacks "...a second subtuple identifying a second flow

5   property associated with the packet..."

Li however, discloses "...a second subtuple identifying a second flow

property associated with the packet (col. 7, lines 32-65 where individual or any

combination of the properties can be used to create a subtuple)..."

It would have been obvious to one with ordinary skill in the art at the time

10   of invention to include the forming of the tuples and subtuples with the applying

the tuples to lookup tables for the purpose of classifying the packet. The

motivation for including the forming of tuples and subtuples and applying the

tuples is to provide fast, efficient classification of packets.

Lastly, Irwin and Li lack what Long discloses, that is "...returning data from

15   the database element in response to the first subtuple, the data comprising a

recursion indicator adapted to preempt application of the second subtuple to the

database element (figures 2 and 8, elements 109 and 708 where a description of

this bit can be read in col. 4, lines 16-24, the valid flag bit of 109 is a functional

equivalent to a recursion indicator because they have the same effect, i.e. they

20   both stop the execution of the lookup process as seen in figure 8, step 708 and

on)..."

It would have been obvious to one with ordinary skill in the art at the time

of invention to include the recursion indicator with the rest of the method for the

purpose of identifying a valid entry into the table (Long, col. 4, lines 10-15). The

motivation is that if the entry is not valid no more resources or time are wasted on

further lookup operations.

5   In regard to claim 13, Irwin, Li, and Long disclose the method of claim 12.

However, Irwin and Long lack "the returned data includes packet processing

data." Li however, further discloses "the returned data includes packet

processing data (figure 7A, elements 63'; where the classes of elements 63' are

similar, if not the same, as in Tables I, II, III)." It would have been obvious to one

10   with ordinary skill in the art at the time of invention to include the packet

processing data with the method of claim 12 for the same reasons and motivation

as in claim 12.

      In regard to claim 29, Irwin discloses "a switching interface for a data

15   communication switch, comprising:

          ...receiving a packet (col. 10, line 66 where the incoming destination

address means that a packet, as described in Table A1 in col. 3, was received);

          means for forming a tuple for the packet including a first subtuple

identifying a first flow property associated with the packet (figure 4, element 70

20   separates the various parts of the header for use; col. 3, Table A1 where some

fields descriptive about the flow properties of the packet such as destination

address, source address, etc. can be considered tuples and where the

combination of these tuples is simply another tuple made of the flow properties of

the packet)...

means for applying the first subtuple to a database element (figure 4, the

connections between the components allow for a means of applying the

5   subtuples as inputs to the lookups; col. 10, lines 66-67 and col. 11, line 1 where

the first byte of the destination lookup is a subtuple applied to the binary tree or

database element)...

However, Irwin lacks "...a second subtuple identifying a second flow

property associated with the packet..."

10   Li however, discloses "...a second subtuple identifying a second flow

property associated with the packet (col. 7, lines 32-65 where individual or any

combination of the properties can be used to create a subtuple)..."

It would have been obvious to one with ordinary skill in the art at the time

of invention to include the receiving of packets and forming of the tuples and

15   subtuples with the applying the tuples to lookup tables for the purpose of

classifying the packet. The motivation for including the forming of tuples and

subtuples and applying the tuples is to provide fast, efficient classification of

packets.

Lastly, Irwin and Li lack what Long discloses, that is "means for returning

20   data from the database in response to the first subtuple, the data comprising a

indicator adapted to indicate the presence, in the data, of: a nickname to be

applied as an input into the database with the second subtuple, and packet

processing data to preempt application of the second subtuple to the database

(figures 2 and 8, elements 109 and 708 where a description of this bit can be

read in col. 4, lines 16-24, the valid flag bit of 109 is a functional equivalent to an

indicator because they have the same effect, i.e. they both stop the execution of

the lookup process as seen in figure 8, step 708 and on, it should also be noted

5   that the presence of valid data suggests the presence of a nickname as

described in Irwin and Li)..."

It would have been obvious to one with ordinary skill in the art at the time

of invention to include the recursion indicator with the rest of the method for the

purpose of identifying a valid entry into the table (Long, col. 4, lines 10-15). The

10   motivation is that if the entry is not valid no more resources or time are wasted on

further lookup operations.

In regard to claim 30, Irwin, Li, and Long disclose the interface of claim 29.

However, Irwin and Long lack "the returned data includes packet processing

15   data." Li however, further discloses "the returned data includes packet

processing data (figure 7A, elements 63'; where the classes of elements 63' are

similar, if not the same, as in Tables I, II, III)." It would have been obvious to one

with ordinary skill in the art at the time of invention to include the packet

processing data with the interface of claim 29 for the same reasons and

20   motivation as in claim 29.

In regard to claim 31, Irwin, Li, and Long disclose the interface of claim 29.

However, Irwin and Li lack what Long further discloses, that is "the returned data

includes the nickname to be applied as an input into the database with the

second subtuple (col. 4, lines 24-33, it should be noted that although Long is

describing a page number comparison, the page number retrieved from the table

itself is still data and could be considered a type of nickname, further the act of

5   applying the nickname as an input to a database with the second subtuple is an

intended use of the nickname and the general concept of applying a subtuple to

a database has been described in Irwin, see claim 29)." It would have been

obvious to one with ordinary skill in the art at the time of invention to include the

returned data including the nickname with the interface of claim 29 for the same

10   reasons and motivation as in claim 29.

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable

subject matter: Claims 8-11 and 25-28 are allowable because the prior art of

15   record fails to teach, in combination with other claim limitations, "...inputting a

second lookup key including a second portion of the tuple and the nickname..."

Response to Arguments

Applicant's arguments with respect to claims 5, 12, 13, 22, and 29-31 have

20   been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from

the examiner should be directed to Joshua Kading whose telephone number is

(703) 305-0342. The examiner can normally be reached on M-F: 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the

5   examiner's supervisor, Douglas Olms can be reached on (703) 305-4703. The

fax phone number for the organization where this application or proceeding is

assigned is 703-872-9306.

Information regarding the status of an application may be obtained from

the Patent Application Information Retrieval (PAIR) system. Status information

10   for published applications may be obtained from either Private PAIR or Public

PAIR. Status information for unpublished applications is available through

Private PAIR only. For more information about the PAIR system, see http://pair-

direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-

15   free).

Joshua Kading
Examiner
Art Unit 2661

June 16, 2004

KENNETH VANDERPUYE
PRIMARY EXAMINER